

PRICE
15¢

PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

MAR 8 1937

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE.



FEBRUARY 27, 1937

Testing

See Page 133

A SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

Vol. XXXI

No. 829

The Weekly  Summary of

Current Science

Published Every Saturday by
SCIENCE SERVICE
2101 Constitution Avenue
Washington, D. C.

THE INSTITUTION FOR THE POPULARIZATION OF SCIENCE organized 1921 as a non-profit corporation, with trustees nominated by the National Academy of Sciences, the National Research Council, the American Association for the Advancement of Science, the E. W. Scripps Estate and the journalistic profession.

Edited by WATSON DAVIS

Subscription rates—\$5.00 a year postpaid; two years \$7.00; 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Back numbers more than six months old, 25 cents.

Canadian subscribers please add 50 cents a year, foreign subscribers 75 cents a year to regular subscription rate to cover postage.

Members of the American Association for the Advancement of Science have the privilege of subscribing to SCIENCE NEWS LETTER at the reduced price of \$3 per year. Application for this privilege should be accompanied by privilege card obtained from the Permanent Secretary, A.A.A.S., Smithsonian Institution Building, Washington, D. C.

In requesting change of address, please give your old address as well as the new one in notification to Circulation Department, SCIENCE NEWS LETTER, 2101 Constitution Ave., Washington, D. C., at least two weeks before change is to become effective.

Copyright, 1937, by Science Service, Inc. Republication of any portion of the SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service.

Cable address: Scienserv, Washington.

Entered as second class matter at the post-office at Washington, D. C., under the act of March 3, 1879. Established in mimeographed form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent Offices.

Advertising rates furnished on application. Member Audit Bureau of Circulations.

Board of Trustees of Science Service

Honorary President, William E. Ritter, University of California. Honorary Vice-President, Vernon Kellogg, National Research Council. Representing the American Association for the Advancement of Science, J. McKen Cattell, President, Editor, Science, Garrison, N. Y.; Burton E. Livingston, Johns Hopkins University, Baltimore, Md.; Henry B. Ward, Permanent Secretary, A.A.A.S. Representing the National Academy of Sciences, W. H. Howell, Vice-President and Chairman of Executive Committee, Johns Hopkins University, Baltimore, Md.; R. A. Millikan, Director, Norman Bridge Laboratory of Physics, California Institute of Technology, Pasadena, Calif.; Harlow Shapley, Director, Harvard College Observatory, Cambridge, Mass. Representing National Research Council, Ludvig Hektoen, John McCormick Institute for Infectious Diseases, Chicago, Ill.; C. G. Abbot, Secretary, Smithsonian Institution, Washington, D. C.; Harrison E. Howe, Editor of Industrial and Engineering Chemistry, Washington, D. C. Representing Journalistic Profession, John H. Finley, Associate Editor, New York Times; Mark Sullivan, Writer, Washington, D. C.; Representing E. W. Scripps Estate, Harry L. Smithon, Treasurer, Cincinnati, Ohio; Robert P. Scripps, Scripps-Howard Newspapers, West Chester, Ohio; Warren S. Thompson, Miami University, Oxford, Ohio.

Staff of Science Service

Director, Watson Davis; Staff Writers: Frank Thone, Emily C. Davis, Jane Stafford, Marjorie Van de Water, Robert Potter; Astronomy writer, James Stokley. Correspondents in principal cities and centers of research. Librarian, Minna Gill; Sales and Advertising Manager, Hallie Jenkins.

DO YOU KNOW?

Lungfish are fierce fighters, attacking one another savagely.

Drinking water is apt to contain more oxygen in winter than in summer.

Vegetables that have been frozen are not thereby spoiled or poisoned but they are more liable to spoilage.

The beaver has been called the "owl" of the mammal world, because its activities apparently begin after sundown.

The Volga-Don canal, now being planned, will link the White, Baltic, and Caspian Seas with the Azov and Black Seas.

A museum of surgery, showing the history and progress of surgery, may be established in New York, according to plans recently announced.

The only African monkey skin with commercial value is that of the Guereza monkey, which has fine, long hair suitable for trimming garments.

Cashmere wool, famous in shawls of that name, is the wool found beneath the hairy coat of goats in the highlands of India.

There is more smallpox in India than in any other country.

The Egyptians knew how to make varnish of soft resins melted in oil.

The giant panda lives on a diet of bamboo, and no other food, so far as observers have detected.

The Royal Canadian Mounted Police, as part of their duties, enforce Dominion laws for wildlife protection.

Cholera is on the rise; public health officials report 334,000 cases throughout the world in 1935, as against 287,000 cases in 1934.

To speed up their experiments in improving varieties of corn, plant breeders are growing a winter crop of corn in greenhouses.

About 800 species of fungi have been found in the Great Smoky Mountains National Park, in North Carolina and Tennessee.

At the University of California, a new treatment for hog cholera has been developed, in the form of a tissue vaccine.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.

AGRICULTURE

Have floods and bad weather ruined the winter wheat crop? p. 136.

How much do farmers pay for sand to put on their fields? p. 136.

ANTHROPOLOGY

Are college students larger than those of 20 years ago? p. 142.

ARCHAEOLOGY

Did floods inspire ancient Indians to build mounds? p. 137.

ASTRONOMY

What does Venus look like through a telescope this month? p. 138.

CHEMISTRY

What new market is planned for southern pine? p. 133.

ENGINEERING

Can the heat value of a piece of coal be measured? p. 132.

How deep can man burrow into the earth? p. 131.

What was found to be the cause of costly leakages through glass insulators? p. 140.

ETHNOLOGY

Can oak leaves be used as cigarette wrappers? p. 140.

METEOROLOGY

Can scientists determine the thickness of fog layers or clouds overhead? p. 134.

ORNITHOLOGY

Where does East meet West among the birds? p. 142.

PHYSICS

How is the accuracy of clinical thermometers insured? p. 132.

What new use has been found for lodestones? p. 132.

PHYSIOLOGY-ECOLOGY

How has civilization reacted on the hay-fever victim? p. 136.

PSYCHOLOGY

Do dogs commit suicide? p. 141.

RADIO

Can faulty house wiring cause a radio receiver to pick up several stations on one dial setting? p. 135.

SAFETY ENGINEERING

Do the fast drivers have the accidents? p. 137.

ENGINEERING

Mining Drill Makes Five-Foot Hole 1125 Feet Straight Down

Device Cuts Eleven-Ton Cores From Rock; At Level 1,125 Feet Down, the Drilling Can Be Repeated

EVERY small boy, when he first learns that China is approximately on the other side of the earth, probably thinks "some day I'm going to dig a hole and go there." The nearest thing to the small boy's fantasy of digging to China was described at the meetings of the American Institute of Mining and Metallurgical Engineers in New York.

J. B. Newsom, mining engineer of the Idaho Maryland Mines Corporation, told of his success in drilling a hole 1,125 feet deep with a core five feet in diameter. The future possibilities of this method are enormous, says an official statement of the society. When the 1,125-foot level is attained a chamber can be hollowed out and operations repeated for another 1,125 feet and so on. Maybe the small boy's dream was not too wild after all.

Mr. Newsom's device works on the principle of the old-fashioned cookie cutter in the kitchen except that it carves out a cylindrical section of rock weighing some eleven tons, instead of dough. From a little shack a 40 horsepower motor rotates a core barrel by means of a vertical shaft. The cutting is done on the bottom rim of the barrel by cutting teeth. As sections of rock are cut they are hoisted up the shaft.

River Pollution

Each day the coal mines on the Ohio River's headwaters pour some 20,000,000 pounds of concentrated sulphuric acid into the beautiful Ohio, it has been estimated. The engineers are seeking some way to prevent this great menace to downstream cities' water supply, navigation and public health.

Here is how abandoned coal mines—greatest potential source of the corrosive acid—affect stream pollution on a major scale. The abandoned mine contains much iron sulphide, or pyrite, which the layman knows best as fool's gold. The oxygen in the atmosphere combines with this mineral. Several chemical steps take place but the final reaction production is the important one. Iron oxide, or rust, and sulphuric

acid are produced during its course.

The acid seeps off in the drainage water from the mine and enters streams which ultimately form the Ohio. The Monongahela River, for example, is distinctly acid in its character because of such mine acid seepage. Only when it meets the alkaline Allegheny River at Pittsburgh is the situation improved by the partial neutralization of the acid.

At the mining meeting E. D. Tisdale, director of the division of sanitary engineering of the West Virginia State Health Department, told how that state, through relief projects, has been employing miners to seal abandoned mines that are believed to contribute more than 50 per cent to the pollution of the Ohio River. The idea behind such sealing is to cut off the free supply of oxygen and decrease the sulphuric acid production.

Discussing the health problem raised by mine acid contamination of streams, Mr. Tisdale said:

"In public health significance we observe two distinct roles played by the acid water. It causes an acid condition in the Monongahela River for the summer and fall periods and during this time of low flows in the Ohio Basin the acid zone appears to creep farther down the Ohio with each drought spell. This makes difficult the operation of water purification plants, and when rains come, changing the river water from acid to alkaline and washing the accumulated sewage sludge in the river quickly down stream, heavy pollution loads come suddenly upon downstream public water supplies in West Virginia and Ohio, running up the *B. coli* pollution index to a dangerously high figure. Thus the city water supplies down stream are detrimentally affected."

Costly

It has been calculated, pointed out Mr. Tisdale, that on a single 50-mile stretch of the Monongahela River industry, public and private water supplies pay in taxes, because of acid water, the total of some \$801,000,000 a year.

Navigation suffers greatly from the acid water and especially is this true on the Monongahela which has the highest concentration of river-borne traffic of any river in the nation. Docks, dams, locks and even vessels themselves suffer excessive deterioration. U.S. Army engineers estimate, said Mr. Tisdale, that the annual cost of navigation from



GIANT COOKIES

Using a boring device like some giant cookie-cutter, engineers have just completed a 1,125-foot mine shaft with a five-foot diameter. Sections of rocks weighing up to 11 tons each have been lifted from the smooth-walled shaft, as shown here.

this cause is greater than the entire amount so far spent in sealing abandoned mines to prevent the hazard.

An additional benefit can be secured if all surface water is led immediately to streams and not allowed to enter the old, no-longer-used mines.

Uses for Lodestones

One of the first scientific observations of the ancients was the discovery of the lodestone, a rock that had the baffling ability to attract other similar stones and transfer their magnetic properties to certain other materials. From this simple fact originated the magnetic compass and the resulting exploration that gave the Americas to the then-known world.

Lodestones are special examples of the mineral called magnetite. Magnetite's unusual properties have long made it a plaything of science and engineering; hardly a plaything though, for it finds valuable, practical uses both as a raw material and as an industrial mineral.

At the New York meeting, magnetite had its own special session and a wider usefulness of the strange red mineral was discussed.

Because it is largely iron, magnetite's widest use is in the production of steel, and H. M. Roche, New Jersey engineer, told how magnetite ore from the east might be mixed with the much more widely known iron ore from the Great Lakes region to yield a superior iron concentrate. Freedom from importation of foreign iron ores would be only one advantage of a greater development of the billion and a half tons of magnetite reserves estimated to exist in New Jersey and New York alone.

From the U.S. Bureau of Mines in Washington came R. S. Dean and C. W. Davis to suggest new uses for this

long-known mineral other than its raw material utilization.

Because of its red color and inert properties it could be employed in paints in quite the same way that red lead is used today, they suggested. The difficulty of grinding magnetite finely without having it cluster by agglomeration has previously prevented this use but the Bureau of Mines scientists have found that a continuous shaking of the magnetite by an alternating magnetic field circumvents this handicap.

Because of its high density, they pointed out, magnetite has been employed where a very heavy concrete is desired as in the counterweights of lift bridges and in anchorages.

Heat Value

A new experimental method by which scientists can look at a piece of coal and tell how much heat it will generate was announced at the meeting.

But don't rush down to your own coal pile and hope to tell whether the present delivery is better than the last one. The new method is relatively simple, but not that simple.

Two midwestern geologists, L. C. McCabe of the Illinois Geological Survey, and Prof. T. T. Quirke of the University of Illinois, described the secrets of coal analysis in their technical paper, "Angle of Polarization as an Index of Coal Rank."

Tiny cubes of coal are polished and brightly illuminated with a small lamp. The light reflected from the polished surface becomes polarized and is studied with Nicol prisms to determine the angle of polarization. By a fundamental rule of optics known as Brewster's Law, the angle of polarization of the reflected light can be related to what scientists call the index of refraction. This last is the degree of bending which a material

will cause as light passes through it.

Final and significant step in the research was the discovery that the amount of heat in B.T.U. (British Thermal Units) which a unit amount of coal can produce is related by a simple straight-line relationship with its index of refraction as measured in the apparatus.

Using the wide range of different kinds of coal found in Illinois, from woody lignite to soft bituminous and so on to harder bituminous, it was found that as the heating qualities of the coals increased, so too, did their index of refraction.

The method, pointed out Mr. McCabe and Prof. Quirke, is still in the experimental stage and the accuracy of the technique could be increased ten or one hundred times with better equipment.

"This investigation," they declared, however, "with improvised equipment, imperfect in many particulars, has discovered what appears to be a physical criterion for rank identification (of coal)."

Science News Letter, February 27, 1937

GOT A FEVER?

With flu, grippe and colds going the rounds, the clinical thermometer is pressed into service as a medical aid. The best, or "certified," of these instruments are sent to scientists at the National Bureau of Standards in Washington where each one is checked to insure its merit. By the thousands they come, numbered in series, for their test. They are arranged according to number (center) and then are placed in convenient holders in small groups. Helen Tyler (right) places a thermometer unit in a controlled water bath where they are automatically rotated to insure an even temperature for checking readings.





CHEMISTRY

Newsprint Mill Planned To Use Southern Pine

East Texas Pine Will Supply New Dallas Mill Which Will Cost Five Million Dollars to Build

DEFINITE plans for building a \$5,000,000 newsprint paper mill to use East Texas pine in its manufacture were made in Dallas in a meeting attended by East Texas capitalists, bankers and owners of timber land. An organization committee has been appointed to organize the company.

It is proposed to erect at once a mill with initial capacity of 150 tons of newsprint daily. The name of the corporation will be the Southland Paper Mills, Inc., and the first unit to be put in operation as Texas Mill No. 1.

Location of the first unit has not been definitely established. Surveys now are being made by engineers who will report on availability of pine timber, water for engines and for plant operation, fuel, transportation facilities, etc., and the location will be announced when these surveys are completed. Organization of the technical staff for operating the mill is in charge of Perkins-Goodwin Company, New York.

Chief advocate of paper mills in the South to use pine timber from cut-over pine timber land has been Dr. Charles H. Herty, research chemist of Savannah, Ga. He interested the Chemical Foundation, Inc., of New York, in the proposition and W. W. Buffum, manager of the Foundation, has devoted much time to the problem. R. W. Wortham, Jr.,

and Albert Newcombe, both of Perkins-Goodwin Company, New York, also contributed much of their time to promoting the mill.

Dr. Herty has made extensive research and has developed a process, in cooperation with the other research agencies, through which pine timber of ten to twenty years' growth can be used in making a grade of newsprint that by test has met all requirements of newspaper publishers.

The entire East Texas territory adjacent to the great East Texas oil field which can furnish oil and gas fuel in unlimited quantity, is recognized as the best pine growing land in the entire South. It has been demonstrated that loblolly pine, excellently adapted for newsprint paper manufacture, can be grown into marketable timber in ten years. Texas had hundreds of thousands of acres of pine land suitable for growing timber for newsprint paper manufacture. The three varieties of Texas pine recognized as having greatest possibilities in this new paper industry are the loblolly, slash and shortleaf. All three varieties grow in abundance, are easily tended and grow to size suitable for pulpwood within ten to twenty years. By reforesting cut-over areas Texas can be made to produce a never-ending supply of pulpwood adequate to

INSURE ACCURACY

Mounted on a special holder, the fever thermometers are read under a low-powered microscope by Mrs. J. S. Timko (left). The thermometers are read to an accuracy of two-hundredths of one degree Fahrenheit and then, just to be cautious, they are certified only to two-tenths of a degree. Shaking down, so tedious a process when done by hand, is accomplished by machine (center). But for really accurate work the government's laboratory has an electrical thermometer seldom seen by laymen which measures temperature to one thousandth of a degree. Esther C. Vaughn looks at the recording scale of the Wheatstone bridge mechanism which checks the scientist's own standards by determining their accuracy compared to known temperature points such as steam, ice and molten sulphur.

all demands of the entire Southwest for newsprint paper.

Science News Letter, February 27, 1937

PHYSICS

Deep Sea Thermometers Tested by Uncle Sam

See Front Cover

BY checking the accuracy of deep-sea thermometers Miss Grace Gowens of the Bureau of Standards aids the scientist to determine accurately the temperature of the sea at great depths. The freezing point of the thermometer is determined with the apparatus shown in the picture on the front cover of this week's SCIENCE NEWS LETTER. The thermometer is placed in the ice for half an hour and then turned quickly, or "flipped." The "flipping" causes the mercury column to break at a constriction and registers the temperature until disturbed. Melting ice has a temperature of 0° C. (32° F.) and is, therefore, a good standard.

Science News Letter, February 27, 1937

METEOROLOGY

New Radio Balloon Instrument Measures Thickness of Clouds

Wind Velocities at Upper Levels of the Atmosphere Above Clouds Also Signaled by Light Instrument

INCREASED safety for aviation is seen in the newest development of the National Bureau of Standards. It is a new device which enables scientists on the ground to learn the height of clouds, their thickness and the altitude to which an airplane must climb to come out "on top," as the pilots call it. H. Diamond, W. S. Hinman, Jr., and F. W. Dunmore of the Bureau's Radio Division have cooperated in the development of the instrument at the request of the United States Navy.

Moreover, the device can be used to learn the wind velocities above or within clouds, which conceal the upper sky, as well as to indicate the temperature and humidity of the air for altitudes up to nearly twelve miles.

The new equipment of the Bureau is an improved type of radio meteorograph; a tiny balloon bearing aloft a small radio transmitter which has characteristic signals for temperature, humidity, and altitude. These signals are received and recorded automatically on instruments on the ground.

Previous radio meteorographs have operated the switching mechanisms by clockwork devices or by a small electric motor which needed a battery to run it. The new design operates entirely without external power and uses the power of varying barometric pressure, as the balloon rises, to accomplish the switching.

Photoelectric Cell

The attachment to the radio balloon device which makes it possible to learn cloud thickness is a small photoelectric cell that records light brightness. As the balloon rises up to the under side of the cloud the photocell gives a reading characteristic of the light brightness found there. When the balloon enters the cloud the light brightness falls sharply and gradually increases until the upper surface of the cloud is reached and the instrument comes out into the brilliant sunshine found there. Since the light brightness for each altitude is transmitted by the balloon and received on the ground the thickness of the cloud

can be accurately estimated although the cloud is miles overhead.

Moreover, by using a delicate directional antenna on the ground receiver it is possible to follow the flight of the balloon even though it is hidden by clouds. This angle above the horizon and the line of direction horizontally when coupled with knowledge of the altitude at the instant when the "sight" was taken, make it possible to fix in space the position of the balloon and its radio transmitter. A short time later,

when the balloon is higher, this process is repeated and the drift of the balloon due to upper air winds can be calculated easily.

The only way this knowledge can at present be obtained by balloon flights is to make two observations of the balloon from two distinct stations by the use of small telescopes. This method naturally will not work in bad weather when it is impossible for the observer actually to see the balloon. Yet this cloudy, bad weather condition is exactly the one which aviation needs most to surmount.

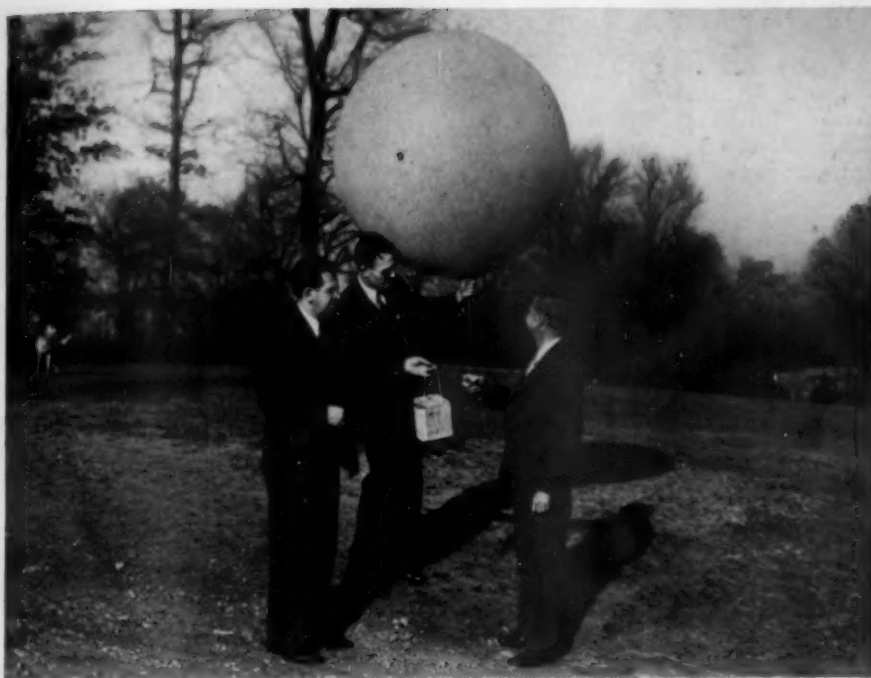
At present much of the knowledge of upper air weather is achieved by daily airplane flights in many parts of the country specifically for this purpose. These flights are costly, however, and average, it is estimated, about \$25 apiece. The National Bureau of Standards believes that with a semi-mass production of the radio meteorographs their cost could be made less than \$25.

Science News Letter, February 27, 1937



ROBOT WEATHERMAN

It goes aloft to 60,000 feet and radios back to earthbound scientists the vital information on which forecasts for aviation and commerce can be made. Margaret Wendt of the National Bureau of Standards in Washington holds the cover box opened to show the tiny three-tube radio transmitter while below is the barometrically-controlled commutator unit which switches the signals from temperature to humidity data alternately. The entire unit weighs less than two pounds and the meteorograph operates entirely without external power.



MEASURES OVERCAST

Scientists Harry Diamond, Wilbur S. Hinman, Jr., and Francis W. Dunmore (left to right) of the National Bureau of Standards hold the radio meteorograph ready for launching. The device not only tells upper air temperatures and barometric pressures for altitudes up to nearly 12 miles but also measures the thickness of clouds; knowledge of great aeronautical value. Even though unseen above clouds a directional antenna can spot the position of radio signals from this instrument and by calculation the wind velocities overhead can be obtained.

RADIO

Find Why Many Stations Are Received on One Dial Setting

Mystery of a Year's Standing Now Cleared Up When Poor Contacts in House Lighting Were Found at Fault

THE year-old mystery of multiple station reception on a single dial setting of a radio receiver has at last been solved. It all started when a radio service man was called to a home in a certain part of New York where the complaint was, "When I tune in WEAF I also hear WOR and WJZ."

Spinning the dial to 660 kilocycles for WEAF, the service man found that the complaint was no myth. Truly he was puzzled, for the three New York stations are widely separated, with WOR at 710 kilocycles and WJZ at 760. Careful examination revealed no internal trouble in the receiver. Seemingly no explanation was logical. Yet other complaints in the same neighborhood soon lent additional mystery to the happening.

News of this peculiar phenomenon reached the ears of the R.C.A. License Engineers. Moreover, they had heard similar reports from other cities, especially Cincinnati, where the engineers of the Crosley Radio Corporation had already started an investigation. Scouts were sent out by both of these groups to obtain all pertinent information about the affected neighborhoods. When they compared notes, the plot thickened. It was apparent that all of the affected vicinities were in areas where there were at least two strong station signals. Yet, only certain houses were troubled. Finally, one night, they struck the clew that put them on the right track.

At one home, it was found that this trouble did not occur when the lights were off. It was thus immediately evi-

dent that the house wiring must account for the trouble. Examination of the wiring revealed a faulty contact. When this was repaired, there was no more interference.

Further investigation revealed that faulty grounds or contacts on the power lines often caused the trouble, while in other instances, poor contacts within the house wiring, or even the plumbing, were at fault. In every case, however, there was a poor contact between two conductors, which acted as a rectifier.

Reported to Commission

On the basis of this, the engineers were able to frame a simple explanation, which the Crosley Corporation presented in report form before a recent meeting of the Federal Communications Commission. It was brought out that the conductor making a rectifying contact becomes a small transmitter, sending out spurious frequencies, which bear a definite relationship to the frequencies of the signals it picks up.

For instance, if the frequency of one station absorbed is designated as a , and that of another, b , the transmitting element sends out the frequencies $a+b$, $a-b$, $2a$, $2b$, $2a+b$, $2a-b$, $2b+a$, $2b-a$, $3a$, and $3b$. Some of these are not heard, because they are outside of the broadcast band. Others occur in positions between stations, where they cause no interference. Occasionally, however, one of these spurious frequencies, coincides with that of a local station, making trouble. This is exactly what happened when listeners complained of hearing WOR and WJZ on the WEAF frequency. For, if WJZ, with a frequency of 760 kilocycles, is designated as a , and WOR, with a frequency of 710 is designated as b , then $2b-a$ is equal to 660, which is exactly the frequency of WEAF.

Preventives

In order to prevent this happening radio engineers suggest improved grounding of power lines and house wiring; installation of radio frequency chokes and bypasses, to prevent the power lines from picking up the radio-frequency signals; and, in some cases, a relocation of the receiver antennas in order to diminish pick-up from the power lines.

Science News Letter, February 27, 1937

Fossil plants have been called "thermometers of the past," because they show what ancient temperature conditions must have been to enable them to grow.

AGRICULTURE

Winter Wheat in Good Shape, Crop Summary Shows

NEXT year's bread, now in the form of winter wheat in the fields, seems to have escaped the hazards of winter and flood with less harm than had been anticipated. This is indicated by a summary of crop weather compiled by the U. S. Weather Bureau.

The winter wheat fields of the Ohio Basin show most of the wheat alive and reviving, as the water recedes. Such harm as was done was caused principally by erosion. In the upper Mississippi Valley grain region, where the fields have for weeks been sealed over with ice, there has been far less loss than observers have been fearing. In eastern Nebraska, melting snow fed the crop. Snow cover still persists in the grain fields of the Pacific Northwest.

Only in the dustbowl area of the nearer Southwest is the situation really unfavorable, as the gray dragon rises to ride the late winter winds.

Science News Letter, February 27, 1937

PHYSIOLOGY-ECOLOGY

Hayfever Victims Paying Price of Civilization

THOSE unfortunate persons who must sneeze and sniffle their way through every summer and fall, unless medical treatment or vacation resorts can give them relief from hayfever, are paying the price of civilization.

This view of a miserable ailment was recently presented by R. P. Wodehouse, scientific director of the Arlington Chemical Company, to members of the American Institute of New York City.

An enormous increase in ragweed and certain other hayfever-causing plants is a by-product of our modern civilization which has disturbed the soil and its natural balance of vegetation, Dr. Wodehouse pointed out. Ragweed plants were scarce before civilization came along to plow up large sections of land, dig ditches for sewers, level off stretches for roads and otherwise disturb the vegetation. Other plants cause hayfever, but ragweed causes more than half the cases of this ailment which afflicts three out of every hundred Americans.

Hayfever belongs in the group of diseases called allergies. An allergy is an extreme sensitiveness to some particular substance, such as pollen, which is not generally irritating.

The hayfever patient and others who suffer from allergies, however, are not invariably abnormal, Dr. Wodehouse suggested. It is their environment which is abnormal. Dr. Wodehouse said that allergy is seldom evident with respect to those things old in the experience of the human race.

Pine trees, he pointed out, produce far greater quantities of pollen than ragweed plants, but no one seems to get hayfever from pine pollen. In fact, some of the hayfever resorts are in the midst of pine forests.

"The human race," he said, "must certainly have been cradled in an atmosphere of pine pollen and has ever since been subjected to annual exposure to it. We are all immune to pine pollen and to a certain extent to the pollen of most of our deciduous forest trees."

Ragweeds cannot grow in competition with other plants, but when the ground is disturbed for any reason, the ragweed is the first to take possession of the newly denuded ground. Civilization has made a ragweed paradise of this continent, Dr. Wodehouse maintains, and the "end is not yet in sight for the ragweeds are still on the increase as more and more areas are laid open to them."

Science News Letter, February 27, 1937

ORNITHOLOGY

Stork Family Group In Field Museum

A STORK family group, consisting of Father Stork, Mother Stork, and three babies (also stork—not human) will be placed on permanent display soon, at the Field Museum of Natural History. The birds are a present from the Polish-American Chamber of Commerce in Warsaw. The finished display group will be shown in its nest of sticks, against a background depicting a typical Polish village.

Storks are of considerable interest to naturalists because they are the only really large birds that have given up their former mode of dwelling in the wild to take up residence on the roofs of human habitations. It is from this circumstance, possibly, that the myth of their activities in bringing babies has arisen. Rudyerd Boulton, curator of birds at the Museum, states that the tribes of Africa, where the birds spend the winter, have no such story in their folklore. They are too sophisticated for it.

Science News Letter, February 27, 1937

IN SCIENCE

AGRICULTURE

Farmers in Seven States Paid \$4,500,000 for Sand

FARMERS of seven southeastern states paid \$4,488,000 for the sand and other inert material in the fertilizer they used in 1934, declares Dr. A. L. Mehring of the U.S. Bureau of Chemistry and Soils. Dr. Mehring made a study of the composition of fertilizer used in Virginia, the Carolinas, Georgia, Florida, Alabama, and Mississippi. He states:

"The filler in a ton of average mixed fertilizer costs \$2.21 delivered to the consumer in the Southern states in the 1934 season. This means that the farmers from Virginia to Mississippi, inclusive, paid \$5,482,000 in one year for filler. That part of the filler that consisted of ground limestone rock, limestone and dolomite would have cost \$894,000 if bought separately on the same delivered basis. This leaves \$4,588,000 as the total paid for sand and similar inert material."

It is pointed out that farmers pay the same bagging, handling and transportation charges for inert filler as for materials that carry valuable nutrients.

Although concentration of available plant foods in mixed fertilizers has increased consistently since the beginning of the fertilizer industry, the concentration of the materials of which the mixed fertilizers are made has increased at an even more rapid rate, it is explained; hence the great quantity of filler now used.

Dr. Mehring states that "economic conditions and the trend of developments in the industries supplying fertilizer materials indicate that, unless steps are taken to raise the average grade of fertilizers being sold, even larger amounts of filler will have to be added."

"It would seem to be the duty of all agricultural workers," he continues, "to make an effort to bring to the attention of the planters and farmers in their districts the advantages that can be obtained by using higher analysis fertilizers."

Science News Letter, February 27, 1937

NE FIELDS

SAFETY ENGINEERING

Fastest Drivers Are Those Who Have Most Accidents

IN CONNECTICUT, at least, the fastest motor vehicle drivers have more accidents, according to study of the Committee on Transportation of Yale University.

During a six-months' study in which the license number and the speed of individual vehicles were recorded the investigators were able to establish two groups of drivers; moderate and fast.

The fast drivers were those who traveled over 50 miles an hour and the moderate group ranged from 35 to 45 miles an hour. A checkup of the accident records of these drivers was then made through records of the state.

The investigators, C. J. Tilden, D. L. Morris, T. M. C. Martin and E. W. Russell, found that without making a distinction as to severity of accidents or responsibility for them, it appeared that 30 per cent more of the high speed drivers had accident records than those of the moderate speed group. Moreover, it was found that the high speed drivers who had accidents had more of them, so that their total exceeded that of the moderate groups by 45 per cent.

Science News Letter, February 27, 1937

MINERALOGY

Little Known Mineral To Find Wide Use

FEW PEOPLE ever have heard of the little-known, little-used lithium mineral called spodumene, but through a process which U.S. Bureau of Mines experts described the mineral may soon help cool your home, improve the dishes from which you eat, better the production of lithia water you may drink, help start your motor car and make a special extra tough glass.

At the annual meeting of the American Institute of Mining and Metallurgical Engineers, Oliver C. Ralston and Foster Fraas, of the Bureau's scientific staff, told of the simple method by which spodumene can be separated from other minerals with which it is associated in nature. Lack of use of the

mineral has, in the past, been due to the absence of such a separating process.

Heating the mineral in a lime kiln, it has been found, reduces the spodumene to a chalky white mass which can be crumbled in the fingers while the remaining minerals in the ore remain strong.

The fine dust resulting from this treatment is about 80 to 90 per cent pure, and from many localities this product will be of acceptable purity. It is much better adapted to use in making lithium chloride than the original hard, dense spodumene. It is also ready to be used in a glass batch, unless nature happened to put magnetic iron minerals in the ore, in which case a preliminary removal of iron minerals would be needed. The pottery makers have desired to use spodumene, but it has been unacceptable because of the fact that at the temperature of a kiln it tended to expand and tear pottery to pieces. The beta spodumene formed by the heating and now to be sifted out of the heated ore has already been expanded and does not have this disadvantage. Therefore potters are urged to forget ordinary spodumene and to try beta spodumene.

Spodumene is the most plentiful of the lithium-bearing ores. It looks much like feldspar and behaves like it. Lithium and lithium salts, heretofore extracted from less common and more expensive ores, now promise to have several important new uses. Lithium chloride solutions, for instance, should find greatly increased use in the conditioning and drying of air in the fast-growing air-conditioning industry.

Science News Letter, February 27, 1937

OCEANOGRAPHY

Green Glass Globes May Cross Pacific From Japan

GREEN glass globes from two to eighteen inches in diameter are frequently found along the Pacific Coast. Some of them are sold to tourists as curios. They are usually said to be net floats lost by Japanese fishermen on the other side of the ocean, states Prof. Vincent P. Gianella of the University of Nevada, in *Science* (Feb. 12). The fact that their under sides are usually crusted with adhering marine plants and animals suggests that they have been a long time adrift, but nobody seems to know. Prof. Gianella therefore suggests that an effort be made to obtain more definite knowledge of their origin.

Science News Letter, February 27, 1937

ARCHAEOLOGY

Says Mound Builders Were Not Inspired by Floods

INDIAN mounds that dot the flood-swept valleys of the Mississippi basin were not built as high places of refuge from ancient floods.

This is the emphatic verdict of Prof. Warren K. Moorehead, archaeologist, of Phillips Academy, Andover.

Sheer nonsense, is Prof. Moorehead's summing up of news statements reviving this theory. The Indian did not do unnecessary labor, and mound building was slow, hard work.

Emphasizing that Indian mound builders could move easily, Prof. Moorehead said, in a statement to Science Service:

"The greatest group of earth mounds in this country, if not in the world, is called Cahokia. It is on the flood plain of the Mississippi, at East St. Louis, Illinois. I explored there from 1922 to 1924. Engineer Cowen and I discussed the old theory as to the purpose of construction.

"We were each at that time about 55 years old, yet we were able to travel on foot from the largest mound, Monks Mound, to the Collinsville Bluffs in forty minutes.

"From the center of East St. Louis to the Collinsville Bluffs is about five miles. Indians could easily travel that distance in an hour. In fact, the whole village could take down and carry its flimsy dwellings and property to the Collinsville Bluffs inside of two or three hours."

Prof. Moorehead found a similar condition at the famous Indian mound site at Etowah, on a flood plain in Georgia. In an experiment, he was able to travel from the center of the village to the high land, north—a little over a third of a mile—in six or seven minutes.

"The whole village," he concluded, "could be moved from the flood plain to the high land in one or two hours, at the most, three or four hours."

To build such enormous mounds as those at Etowah and Cahokia, Prof. Moorehead has estimated, would require hundreds of Indians for several generations, or several thousand Indians working for a short time.

"Indians, or for that matter, white people could use any kind of elevated land in case of flood," Prof. Moorehead concluded. "But I contend the mounds were not built for such purpose."

Science News Letter, February 27, 1937

ASTRONOMY

Orion the Key

Conspicuous Stars in the Belt, Three in a Row, Help In Locating Other Stars; Spring Comes on March 20

By JAMES STOKLEY

ON a clear evening in March, Orion, the heavenly warrior, appears in the southwest, easily identified by the three stars of similar brightness in a row, which form his belt. This constellation provides an easy starting point for the study of the March heavens. Above is Betelgeuse, below is Rigel. Using the belt stars as pointers, and following their direction to the right, one comes to a V-shaped group of rather faint stars, with a bright one, distinctly red in color, on the left arm of the V.

These are the Hyades, marking the face of Taurus, the bull. The bright star, Aldebaran, marks the animal's eye. Still farther to the right is a smaller cluster, the Pleiades, known in mythology as the "seven sisters."

If we follow the direction of the belt to the left, it brings us just above the brightest star in the sky, Sirius, the dog-star, part of Canis Major, the great dog. This should not be confused with Venus, which is much brighter.

Venus, however, is a planet, a body like the earth, revolving around the sun and forming part of the solar system. It has no light of its own, but is visible by the sunlight it reflects. Sirius, like all the stars, is another sun, a glowing globe of gas, half a million times as distant as ours.

Venus this month is almost directly west, below the Pleiades, while Sirius is farther to the south. Both of these objects are pictured on the accompanying maps. These depict the skies as seen about 10:00 p. m. March 1, 9:00 p. m. March 15, and 8:00 p. m. March 31.

The Twins

Above Orion are the Gemini, the twins Castor and Pollux. Canis Minor, the lesser dog, is above his larger brother, and contains the star Procyon. High in the northwest is Capella, part of Auriga, the charioteer. Farther north is Cassiopeia, the queen. This group has the shape of the Greek capital letter Sigma, or a W turned on its side, the top to the right. The great dipper, part

of Ursa Major, the great bear, is high in the northeast. The "pointers" at the upper part of the bowl of the dipper, indicate the direction of Polaris, the pole star.

By following the curve of the handle of the dipper to the south, Arcturus can be located, in Bootes, the bear driver. Still farther south is Spica, marking Virgo, the virgin. Another prominent constellation is seen above Virgo, which is Leo, the lion. Just as the great bear contains a smaller group, the dipper, so does the lion contain the "sickle." The blade, which also forms the lion's head, curves to the right, and Regulus, below, marks the end of the handle.

Spring!

An important astronomical event occurs on Saturday, March 20, at 7:45 p. m., eastern standard time. The sun, which has been moving northward in the sky all winter, reaches the half-way point, and crosses the equator. This is the beginning of spring.

Venus is the only planet visible on March evenings. Mercury and Saturn are both too nearly in the sun's direction to be seen at all this month. Mars appears in the east about midnight, while Jupiter comes up about three hours be-

fore sunrise. But the great brilliance of Venus well atones for the lack of other planets. It can get brighter than any other planet or star, and this month it is brightest, on the twelfth. Then it will be of magnitude minus 4.3. Sirius, the brightest star, is minus 1.6; thus Venus exceeds it about 40 times. The difference in brightness between a star of one magnitude and the next is about two and a half times.

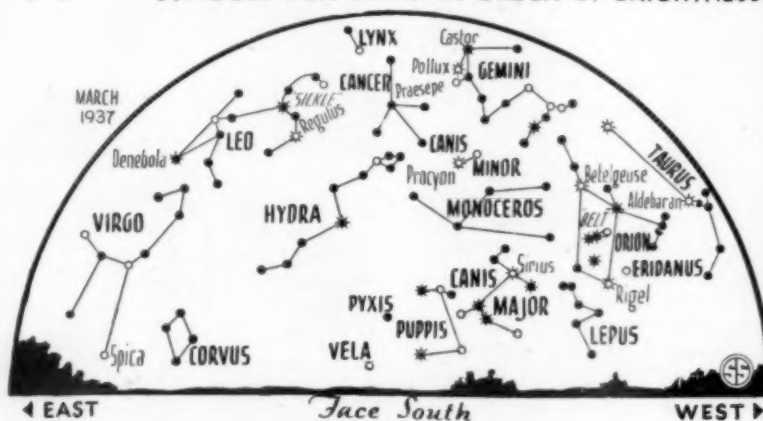
A Crescent

Through a telescope during March Venus looks like the crescent moon. This happens because, being a planet, it is illuminated by the sun, so that the sunward hemisphere is bright, the other dark. The same, of course, is true of earth. Venus moves in an orbit only 67,170,000 miles from the sun, while that of the earth is 92,900,000 miles.

At present Venus is coming between earth and sun, so that most of its lighted half is turned away from us, and only the edge left in view. During the coming weeks, as it swings into line with the sun on April 17, the crescent will become more narrow, until it disappears entirely.

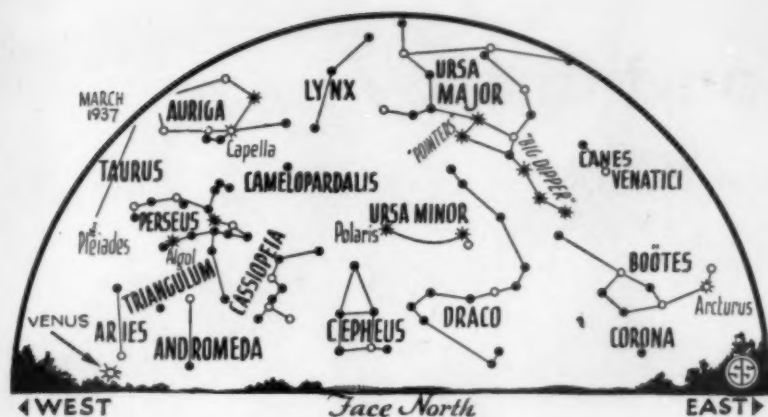
The moon changes phase in just the same way but it differs in one important particular. Its distance does not vary greatly from the average of 240,000 miles. Hence, it appears the same size whether full or in a crescent phase. But

☼ * ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



THE AID

Use Orion's familiar belt as the starting point in your search for the stars.



Venus is in the "new-moon" phase, but at its brightest for all that.

when Venus is full, when the bright half is toward us, it is beyond the sun, at a distance of 160,000,000 miles, equal to the sum of the distance of Venus, and the distance of the earth, from the sun. Now Venus is in nearly the same direction from sun as earth and is less than 30,000,000 miles from us.

Again, the moon is brightest when it is full, but Venus, as this month, is brightest as a crescent. Always the same size, the moon gives us more light, the more of the bright half is towards us. This would be true of Venus also if its distance did not change, but, as it does, there are two factors to be considered. Its proximity makes it look brighter, and this more than compensates for the phase.

Support for Theory

In the history of astronomy, the phases of Venus have great interest, because their discovery afforded one of the most convincing arguments in favor of the theory of Copernicus that the earth, and the other planets, revolve around the sun. Before 1543, when he published his ideas, the Ptolemaic theory had held sway. This taught that the sun and planets revolved about the earth as center.

Venus, the followers of Ptolemy supposed, moved in an orbit smaller than that of the sun. Furthermore, since it was never observed more than about 45 degrees away from the sun, they thought that it swung first to one side, then to the other, of the line connecting the sun with the earth. It could never possibly get beyond the sun, and so its phase should always be a crescent, wide or narrow.

So radical did the authorities of the day consider the Copernican theory that

they gave it violent opposition. But in 1610 Galileo, in Italy, with his newly invented telescope, found that Venus showed a complete change in phase, from crescent to full. Not quite sure, perhaps, but wishing to establish his claim, he first announced his discovery as an anagram, "Haec immatura a me iam frustra leguntur: o. y." Apparently this means: "These things not ripe are read, as yet in vain, by me." But if the letters of the Latin sentence are rearranged they read "Cynthiae figuras aemulatur Mater Amorum." That is: "The Mother of Love imitates the phases of Cynthia." The "Mother of Love," of course, was Venus, while Cynthia was the moon. He announced the solution several months after the original anagram. Probably in the meantime he had made further observations to confirm his remarkable discovery. The only way that it could be explained was by assuming that Venus was sometimes nearer than the sun, sometimes farther away—that is, it revolved about it.

Neptune

There is another planet in the evening sky in March, in the direction of Leo, but it is visible only through a telescope. This is Neptune, which was, before the discovery of Pluto in 1930, the most distant known planet. On March 8, at 9:00 a. m. E.S.T., it is directly opposite the sun, and at its closest this year, but even then it is 2,713,730,000 miles away.

The phases of the moon are given in the accompanying table. Twice will it be at the greatest distance of its path around the earth, at the point called apogee. On the third, at 3:00 a. m., it will be 251,370 miles from us. Then it draws closer, and on the 14th, at

10:00 p. m., will be at perigee, its distance 225,970 miles. Then it recedes, to a second apogee on the 30th, at 8:00 p. m., with 251,910 miles separating it from earth, and starts approaching again.

On March 15, at 8:38 a. m., E.S.T., the moon passes Venus, about four and a half moon diameters to the south. Thus, on the evening of the 14th, the moon will be seen to the west of Venus, and by the next evening it will have moved to the east.

Phases of the Moon

E.S.T.

Last Quarter	.....	March 5,	4:17 a.m.
New	.....	March 12,	2:32 p.m.
First Quarter	.....	March 19,	6:46 a.m.
Full	.....	March 26,	6:12 p.m.

Science News Letter, February 27, 1937

ASTRONOMY

Whipple Comet is Now Increasing in Brightness

A COMET discovered by Dr. F. L. Whipple of Harvard Observatory, which astronomers are now watching in the northeastern sky through telescopes, has increased in brightness some six and one-quarter times and moved a distance about six times the apparent diameter of the sun at noon, according to latest observations. (Feb. 15.)

When first noted on photographs on Feb. 4 and again on Feb. 7, the Whipple comet was of the twelfth magnitude. It increased in brightness until of the tenth magnitude. It will not be visible to the naked eye until it reaches the sixth magnitude, which will require a further increase in brightness of some 39 times over what it is now.

Astronomers have not yet computed an orbit that will tell whether the comet will attain naked eye visibility. Latest position of the comet is at right ascension 13 hours, 30 minutes and 5 seconds; declination plus 38 degrees, 39 minutes and 13 seconds. This position is near the minor constellation Canis Venatici, the hunting dogs. The tail of the comet is "less than one degree long." For comparison, the apparent size of the full moon's diameter is a little over one-half degree.

Science News Letter, February 27, 1937

Chimpanzees can catch cold, like human beings, but apes cost so much they have not been used in extensive experiments to learn more about the common cold.

ENGINEERING

Air Moisture Is Cause of Lower Insulator Efficiency

LOSSES in high-tension power transmission are expected to be considerably reduced through the discovery at the Harvard Graduate School of Engineering that moisture in the air is the hitherto unsuspected cause of the costly inefficiency of the porcelain and glass insulators used on the lines.

The discovery, made by Prof. Chester L. Dawes and Dr. Reuben Reiter, was made possible by their perfection of a high-voltage bridge with which to detect the tiniest flaws in high-voltage insulation, a problem that has troubled electrical engineers for some time.

With the instrument, scientists can now enter an entirely new field of research in insulation and thus possibly bring man closer to his dreams of managing tremendous amounts of power safely and efficiently by revealing the causes of insulator "flashovers" that so frequently paralyze power lines.

Tentative findings also indicate that one of the causes of radio interference is due to high-voltage "static" discharges over the surface of these insulators.

That moisture in the air could cause such flashovers and shortcircuits was unknown during the 30 years that insulators of this type have been in use until the two Harvard scientists began a series of delicate measurements with the Dawes bridge. These showed that atmospheric humidity, or moisture in the air, produces not only a pronounced power loss over the insulator but that the loss is greater over a period of time than if the scientists began with a clean insulator. The greater the moisture in the air, it was found, the greater is the loss. Cleaning the insulator by vigorous rubbing with a chamois cloth, however, was found to return the power to its initial value.

This led to the assumption that a permanent deposit forms on the surface of the insulator and decreases its efficiency, an assumption later confirmed by observations through a special dark-field microscope which readily reveals minute surface irregularities. The deposit, it was found, takes the form of millions of tiny islands which, because of difficulties of observation, are not visible with an ordinary microscope.

The islands are formed, the two

scientists believe, by the activating effect of high-voltage corona, or electrical discharge, on the air and the moisture contained in it. This action causes the nitrogen in the air and the moisture to form nitrous and nitric acid, which, acting with the metal of the insulator cap and tin, form the deposit. The exact composition of the islands is being further investigated, however, by chemical, X-ray and microscopic means.

Under normal conditions of the corona and atmospheric humidity, the resulting power leakage probably amounts to only a watt or so per hour for each insulator. With the accumulation of deposit, however, this loss increases with time, and for some systems may amount to a tremendous number of kilowatt-hours per year.

More important, however, according to Prof. Dawes, is the fact that the deposit is semi-conductive, and reduces the length of the insulating path over the insulator surface. Thus the insulator flashes over more readily and at a lower voltage, which may account for some of the inexplicable flashovers and shutdowns. The action of the electricity in jumping from island to island over the insulator surface is believed to be a probable cause of radio interference.

While electrical bridges somewhat similar to the one which made possible this research have been in use for many years, none of them has operated satisfactorily in measuring very small power losses at high voltages. The stray currents of previous bridges induced by the high-voltage wires have been eliminated by shielding the different parts of the bridge with sheet metal. Under some circumstances these currents have produced errors which might have magnitudes equal to several times that of the actual power being measured. High frequencies introduced by high voltage discharge, another source of large errors in previous instruments, have been eliminated by electric filters which permit only the power-frequency currents to pass.

The high sensitivity required for measuring minute amounts of power is obtained with vacuum-tube amplifiers, based on the same principle as those used in radio receiving sets and public address systems. These too, however,

must be carefully shielded by metal screens from the induction effects of the surrounding high-voltage wires.

Thus far the bridge is functioning satisfactorily for voltage as high as 200,000 volts.

Science News Letter, February 27, 1937

ETHNOLOGY

Oak Leaves Find Use As Cigarette Papers

THE BEST cigarette wrappers are colored green and are at least as thick as medium weight Manila paper. Such, at least, is the opinion of epicures among the Shawnee Indians. The wrappers are from the leaves of the black-jack oak of Oklahoma and Texas.

The technique of making and using these wrappers was demonstrated recently to guests from the nearby University of Oklahoma by Billy Williams, genial member of the Shawnee tribe. In July or August, the leaves are cut into oblong pieces. The midrib and more prominent veins are flattened by gentle pounding on a flat stone, after which the oblongs are dried under a heavy weight. Beautifully flattened, the dried wrappers keep indefinitely.

When needed, several at a time are "relaxed" by steam or boiling water and placed in the user's pouch or pocket. The cigarettes are rolled in the usual way, even to a rather futile moistening of the edge. In smoking, it is necessary to keep rather tight hold upon the elastic green cylinder which results, lest it uncoil.

The flavor, instead of suggesting scorched leather as one might expect, is rich and excellent, by white standards as well as red. The burning oak leaf adds a slightly heavier, more pungent aroma which blends perfectly with that of the tobacco.

Science News Letter, February 27, 1937

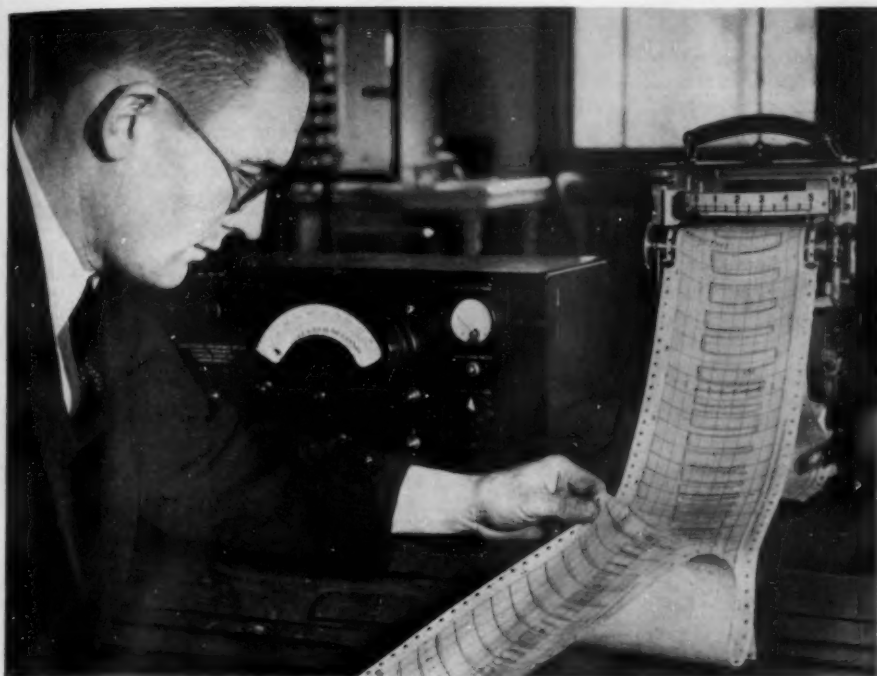
Books

SCIENCE NEWS LETTER will obtain for you any American book or magazine in print. Send check or money order to cover regular retail price (\$5 if price is unknown, change to be remitted) and we will pay postage in the United States. When publications are free, send 10c for handling.

Address Book Department

SCIENCE NEWS LETTER

2101 Constitution Ave. Washington, D. C.



READING THE RECORD

The meteorograph sends signals that result in this graphic chart. (See page 134.)

PSYCHOLOGY

Explanation of Suicide May Be Found In Lovers' Death Pacts

YOUNG lovers who kill themselves rather than be separated give a clue to better understanding of the whole unsolved problem of suicide. Reasoning along this line, presented by Dr. Gregory Zilboorg of New York City, was discussed at a luncheon meeting limited to members of the American Orthopsychiatric Association.

Dr. Zilboorg, one of a committee that is making a study of suicide, sees self-destruction as a fundamental natural phenomenon similar to war, murder, or revolution. Suicide, he declares, cannot be solved or explained by common sense or even by present psychiatric knowledge.

Suicide is not limited to mankind, he pointed out. Dogs and monkeys, when mistreated, will refuse to eat and thus effectually commit suicide. From study of young persons and primitive peoples, Dr. Zilboorg believes, will come the true solution of the question of why men and women and even children kill themselves.

Saying that a person kills himself because he cannot bear to go on living is the sort of explanation that Dr.

Zilboorg terms superficial. He suggests a more fundamental explanation: The will to live is so strong in some persons that it forces them to kill themselves. Actually, they defeat their own ends. But their subconscious reasoning is that some outside force, parents or civil authorities or circumstances, is threatening their very lives by making living impossible. So, in order to live they must thwart this outside force, and the only possible way to do that seems to be suicide, taking their own lives.

In children, parents or teachers may be the outside force that appears to make living impossible. For the eighteen- or twenty-year-old person, the outside force is frustrating the sexual drive, either because a romance is being thwarted or because the young person cannot find a satisfactory solution for his sex problems. The condemned criminal hangs himself in his cell to prevent the authorities from taking his life.

These explanations of suicide are fairly easy to find. When an older person kills himself the explanation is not so obvious. Failure in business, disappointment in love or any of the other

conventional, common sense explanations do not really explain the suicide, in Dr. Zilboorg's opinion. If psychiatrists could probe deeper into the suicide's mental and emotional make-up, Dr. Zilboorg suggests, he would probably find that the underlying cause is failure to shake off the emotional and sexual ties of childhood.

Strikers Rebellious Children

The employer who is zealously devoted to his business is really being a "stern father" in his relations with his employees and his striking employees are rebellious children resentful of the authoritative parent.

This explanation of labor difficulties was made by Dr. John Levy, New York psychiatrist.

If the employer and his employees could see themselves as playing these roles, they might find successful techniques for settling their difficulties, Dr. Levy suggested.

Modern men and women pride themselves on being 100 per cent efficient in their business and industrial activities, but most of them are only about 25 per cent efficient in handling emotional relations with others and only 35 per cent efficient in enjoying contact with other men and women, Dr. Levy estimates.

"One might think," Dr. Levy said, "that a husband and a father who spends most of his time bossing around his employees, who would rather go to his business on Sundays and holidays than spend his free time with his family, understands, at least intuitively, the tremendous emotional ties that bind him to the office."

"But it is as difficult for him to see his own status as 'stern father' in his strict dealings with his striking employees as it is for the employees to see their protesting behavior as a resentment against an authoritative parent. And without some recognition and understanding of the role one plays in human relationships, the development of techniques for controlling them is impossible."

The first step in developing a method for improving and enriching feelings that human beings have for each other, and for reducing dissension and friction between them, Dr. Levy said, is "to clarify the roles each plays in any special and close contact." He then showed how this is done by discussing the technique of "relationship therapy" used by psychiatrists in the treatment of patients.

Science News Letter, February 27, 1937

ORNITHOLOGY

NATURE RAMBLINGS

by Frank Thone



Where East Meets West

EAST meets West—if you go far enough south.

That is one of the things Dr. Alexander Wetmore of the U. S. National Museum found during a six-weeks' expedition to study the birds of Guatemala, from which he recently returned.

In the highlands of the Central American republic, the first birds that caught his eye were old familiar friends from the United States, down there for the winter, or in transit through the funnel-throat of Central America on their way into the wider forests of South America. Over 200 species of North American birds are known as winter migrants in Guatemala.

And since Atlantic and Pacific are not very far apart in the Central American region, bird species characteristically at home in the Alleghenies there fraternize with other species that never nest east of the Rockies. Dr. Wetmore often saw, in the same Guatemalan tree, birds that would never be found within a thousand miles of each other when they are at home.

Dr. Wetmore also found in the pine

and oak forests of the Guatemalan mountains many genera of birds close of kin to North American birds, but distinctively Central American, never straying northward. Such familiar fowl as woodpeckers, kingfishers, song sparrows, swifts, hawks and owls were found mingled with trogons, motmots, and other birds never found in the temperate zone.

On one lake Dr. Wetmore collected six specimens of helldivers, or grebe, very similar in coloration to the common helldiver of the United States and Canada, but very much larger. This lake is the only place in the world where this giant grebe is found.

An oddity of bird behavior noted by Dr. Wetmore in one place he visited was the eating of avocados by a species of black vulture, which elsewhere feeds only on a flesh diet. The avocados of that particular locality are of extra choice quality, but since they retail at only a quarter of a cent apiece the growers do not trouble to harvest their whole crop. Hence, whenever a gust of wind shakes a grove, a lot of over-ripe fruits drop to the ground and burst open with loud pops. Whereupon the waiting vultures in the treetops drop to the ground also, and feast on the rich pulp.

Science News Letter, February 27, 1937

ANTHROPOLOGY

College Students Taller, Heavier Than 20 Years Ago

COLLEGE freshmen are taller, heavier and younger than those of twenty years ago.

Several years ago Harvard University discovered that its students were growing taller at the rate of one inch every thirty-two years. But, it was argued, Harvard students represent a privileged

RADIO

March 2, 5:15 p.m., E.S.T.
JUNGLE AND DESERT AMERICANS
—Dr. Vincent Petrucci, explorer, anthropologist.

March 9, 5:15 p.m., E.S.T.
EGYPTIAN TOMB DISCOVERIES—
Ambrose Lansing of the Metropolitan Museum of Art.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

class. What about middle class Americans?

The University of Cincinnati undertook to find out. Its students come from middle class homes, very few are specially privileged and many are underprivileged and entirely self-supporting.

Dr. Laurence B. Chenoweth of the students' health service, assisted by National Youth Administration workers, has studied the history and physical examination records of every Cincinnati freshman for the last twenty years.

1.78 Inches in 20 Years

Men freshmen entering this university for the 1935-36 term were a full 1.78 inches taller than those entering in 1916. Freshmen women entering in 1935-36 were 0.79 inch taller, on the average, than those admitted twenty years earlier.

Weight has increased gradually during that period in all students, although the increase has been greater for men than for women.

In 1916 the average male student entered this university at the age of 19.45 years. In 1935-36 the average age for entering students was 18.83 for men and 18.60 for women.

"The probable causes of the increase in stature and weight of young people are better nutrition in infancy and childhood, less communicable disease, higher standards of living, and a higher degree of health intelligence among people in general," comments Dr. Chenoweth, in presenting his study in the *Journal of the American Medical Association* (Jan. 30).

Those who have contributed most to this improved state, in Dr. Chenoweth's opinion, are doctors (particularly pediatricians), nutritionists, public health workers and educators.

These studies in the "end product of the public schools" seem to indicate that a definite racial betterment is taking place in the United States and that the improvement is only partially influenced by social and economic position, this university health worker concludes.

Science News Letter, February 27, 1937

This Handy Coupon

IS FOR NEW OR RENEWAL SUBSCRIPTIONS

To Science News Letter, 2101 Constitution Avenue, Washington, D. C.

Please ☐ start ☐ renew my subscription to SCIENCE NEWS LETTER for ☐ 2 years, \$7 ☐ 1 year, \$5

Name

Street Address

City and State

Extra postage charges: 50c a year in Canada; 75c a year in foreign countries.

•First Glances at New Books

Additional Reviews
On Page 144

Medicine

THE RELIEF OF PAIN; A HANDBOOK OF MODERN ANALGESIA—Harold Balme—*Blakiston's*, 392 p., \$4. Dr. Balme was formerly Professor of Surgery and Dean of the School of Medicine, Cheeloo University, China. An introduction by Sir E. Farquhar Buzzard describes the book as "a valiant and successful attempt to assemble and evaluate the weapons ready to our hands for the prevention and alleviation of physical pain; it indicates their limitations and dangers, describes their usage, and gives man a helpful hint in their practical application."

Science News Letter, February 27, 1937

General Science

REPORT ON THE PROGRESS AND CONDITION OF THE UNITED STATES NATIONAL MUSEUM FOR THE YEAR ENDED JUNE 30, 1936—Smithsonian Institution—*Govt. Print. Off.*, 115 p., 15c.

Science News Letter, February 27, 1937

Education

HOW TO USE THE EDUCATIONAL SOUND FILM—M. R. Brunstetter—*Univ. of Chicago*, 174 p., illus., \$2. Children of the coming years will go to the movies in their schools as a part of their regular lessons because talkies are educationally effective as well as pleasant—perhaps because they are pleasant. This book tells teachers what they need to know in order to use this new technique.

Science News Letter, February 27, 1937

Television

TELEVISION, A GUIDE FOR THE AMATEUR—Sydney Moseley and Herbert McKay—*Oxford*, 144 p., illus., \$2. A British layman's book of the television art which gives a good account of the systems foreign to the United States. The illustrations are the best yet seen in such volumes.

Science News Letter, February 27, 1937

Chemistry

MODERN CHEMISTRY (4th ed.)—Charles E. Dull—*Holt*, 745, xxxii p., illus., \$1.80. A revision of this much-used high school textbook. Many of the illustrations are new.

Science News Letter, February 27, 1937

Physics

INTRODUCTION TO COLLEGE PHYSICS—John Remington Hobbie—*Farrar & Rinehart*, 756 p., \$3.50. An

attractive new college text by the professor of physics at Skidmore College. It is designed for the general student and the applications of principles are chosen from general experience. Details of engineering applications are left for more advanced study. The use of perspective drawing in many places helps to illustrate the more difficult points.

Science News Letter, February 27, 1937

Science

MORE SIMPLE SCIENCE: EARTH AND MAN—Julian Huxley and E. N. da C. Andrade—*Harper*, 352 p., \$2.50. A companion volume to the same authors' *Simple Science*. The present book begins with geology (mostly historic geology) and works through the origin and evolution of life, soil and agriculture, genetics, the history of science, to a short closing consideration of Science and General Ideas.

Science News Letter, February 27, 1937

Biology—Juvenile

THE POND BOOK—Walter P. Porter and Einar A. Hansen—*American Book Co.*, 210 p., illus., 88c. **FIELDS AND FENCEROWS**—Walter P. Porter and Einar A. Hansen—*American Book Co.*, 274 p., illus., 88c. Two attractively gotten up nature readers, on living things every child can find for himself, for the lower grades.

Science News Letter, February 27, 1937

General Science

THE WORLD OF SCIENCE—F. Sherwood Taylor—*Reynal & Hitchcock*, 1,064 p., illus., \$3.75. Encyclopedic in size and covering the fields of physics, chemistry, geology, astronomy and biology, this volume will be useful for reference purposes and serious reading. There are 677 diagrams and illustrations and the style lies between that of the conventional textbook and the highly popularized science book. British in origin.

Science News Letter, February 27, 1937

Review of Year

IN 1936—Alvin C. Eurich and Elmo C. Wilson—*Holt*, 620 p., illus., \$2.50. A new kind of yearbook, more readable and less encyclopedic than the usual kind. The science chapter hits most of the high points but is not exhaustive. The authors teach at the University of Minnesota and make tests for Time Magazine.

Science News Letter, February 27, 1937

Cartography

CARTOGRAPHY—Charles H. Deetz—*U. S. Govt. Print. Off.*, 83 p., maps, 60c. A scholarly but digestible discussion of the principles and methods that underlie the making of maps, which should aid greatly toward making maps better understood and more useful. This publication will doubtless be welcomed by teachers and advanced students of geography, as well as by those directly concerned with the science of cartography.

Science News Letter, February 27, 1937

Psychology

PERSONALITY IN THE DEPRESSION, A STUDY IN THE MEASUREMENT OF ATTITUDES—Edward A. Rundquist and Raymond F. Sletto—*Univ. of Minnesota*, 398 p., \$4. What did the depression do to young people—those who were able to stay in school, those who could get jobs, and those who could not? What happened to their attitudes toward the family, law, education, and the economic situation? These were the questions for which answers were sought in the study reported. The work, which is lithoprinted, emphasizes discussion of techniques for this type of research.

Science News Letter, February 27, 1937

Pharmacy

NEW AND NONOFFICIAL REMEDIES, 1936—*American Medical Association*, 610 p., \$1.50. Descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1936.

Science News Letter, February 27, 1937

PSYCHOLOGY OF SEX
by HAVELOCK ELLIS

ONE
VOLUME

•

UNABRIDGED



CARL VAN DOREN
says:

"The best one-volume treatment of sex in the English language"

"...the best of all available books on this subject."
—HYGEIA (Published by the American Medical Association)

—PARTIAL CONTENTS—

The Art of Love	Sexual Variations and Abnormalities
Sex Life of Unmarried Adults	Substitutes for Sex
Sex in Marriage	Age and the Sexual Impulse
Sexual Adjustments	

Price \$3.00 (Postage 15c extra) 389 Pages
5-DAY MONEY-BACK GUARANTEE
Emerson Books, Inc., Dept. 644-S, 251 W. 19th St., N.Y.C.

•First Glances at New Books

Additional Reviews
On Page 143

Vocational Guidance

MEN, WOMEN, AND JOBS, A STUDY IN HUMAN ENGINEERING—Donald G. Paterson and John G. Darley—*Univ. of Minnesota*, 145 p., \$2; text edition, \$1.50. From time to time, interesting research studies have been coming from the Employment Stabilization Research Institute. This book is termed by the Institute's director an "overview" of those researches dealing with individual studies of men and women workers. It is a companion volume to Stevenson and Vaile's "Balancing the Economic Controls" which represents a similar bird's-eye-view of the economic investigations of the Institute.

Science News Letter, February 27, 1937

Geology

AN INTRODUCTION TO HISTORICAL GEOLOGY, WITH SPECIAL REFERENCE TO NORTH AMERICA (4th ed.)—William J. Miller—*Van Nostrand*, 499 p., illus., \$3.25. A new edition of a successful textbook thoroughly covering one special phase of geology.

Science News Letter, February 27, 1937

Psychology

HOW TO FIND AND FOLLOW YOUR CAREER, STRAIGHT THINKING ON CAREER PLANNING—William J. Reilly—*Harper*, 161 p., \$1.75. The author of this inspirational book secured a background for it on the teaching staff of the Carnegie Institute of Technology.

Science News Letter, February 27, 1937

Sociology

WELFARE ACTIVITIES OF FEDERAL, STATE AND LOCAL GOVERNMENTS IN CALIFORNIA, 1850-1934—Frances Cahn and Valeska Bary—*Univ. of California*, 422 p., \$3.50. This report, of interest mainly to social workers and sociologists, discusses the interrelations of administrative units in the various governmental welfare set-ups. It is a publication of the Bureau of Public Administration, University of California.

Science News Letter, February 27, 1937

Economics

PUBLIC WORKS PLANNING—National Resources Comm.—*Govt. Print. Off.*, 221 p., maps, tables, 60c. Three billion dollars were spent on public works in 1930 and some thirty-odd billions will be expended during the next decade on natural resources development and new facilities through public-construction enterprises. Because public

works are such a major American industry, planning studied here is pertinent to our national progress. Sections are devoted to drainage basin problems and programs and the division of costs and responsibility.

Science News Letter, February 27, 1937

Medicine

RESEARCH IN DEMENTIA PRECOX (PAST ATTAINMENTS, PRESENT TRENDS AND FUTURE POSSIBILITIES)—Nolan D. C. Lewis—*Natl. Comm. for Mental Hygiene*, 320 p., \$1.50. A careful study by a prominent neurologist, who, in addition to visiting 200 laboratory, hospital and other scientific centers in this country has reviewed the literature published during the 15-year period from 1920 to 1934. One hundred and twenty pages of bibliography are included in the book.

Science News Letter, February 27, 1937

Pharmacy

A TEXTBOOK OF INORGANIC PHARMACEUTICAL CHEMISTRY FOR STUDENTS OF PHARMACY AND PHARMACISTS (2d ed.)—Charles H. Rogers—*Lea & Febiger*, 724 p., \$7. Thoroughly revised to conform to the eleventh revision of the U.S. Pharmacopoeia and the sixth edition of the National Formulary.

Science News Letter, February 27, 1937

Pharmacy

MATERIA MEDICA AND THERAPEUTICS, A TEXTBOOK FOR NURSES (6th ed.)—Linette A. Parker—*Lea & Febiger*, 377 p., colored plates, \$2.50. A new edition, enlarged by the addition of the newer drugs and thoroughly revised to conform to the eleventh revision of the U.S. Pharmacopoeia.

Science News Letter, February 27, 1937

Pharmacy

USEFUL DRUGS (10th ed.)—Ed. by Robert A. Hatcher—*American Medical Assn.*, 240 p., 75c. A selected list of essential drugs with brief discussions of action, uses and dosage.

Science News Letter, February 27, 1937

Economics

MORE FOR YOUR MONEY, A BUYER'S GUIDE—H. Bennett—*Chemical Pub. Co. of N. Y.*, 251 p., \$2.75. Good advice on buying the things that we use in everyday life, based on many sources. Trade names are not mentioned, but the book is dedicated to the idea that knowledge is power.

Science News Letter, February 27, 1937

Plant Physiology

METHODS IN PLANT PHYSIOLOGY, A LABORATORY MANUAL AND RESEARCH HANDBOOK—Walter E. Loomis and Charles A. Shull—*McGraw-Hill*, 472 p., \$4.50. The lamentable lack of good textbooks in plant physiology which existed a couple of decades ago has happily long since been remedied, but there still remained a need for a full, comprehensive manual for use in the plant physiology laboratory. This need is now so well filled by Professors Loomis and Shull that there remains nothing more for the teaching plant physiologist to ask. The experiments cover the whole field and range from the simplicity of Hales's pioneer efforts to tasks requiring the most modern electrical equipment. The chapter on statistical methods contributed by Prof. G. W. Snedecor, and the numerous tables of pertinent physical constants in the Appendix, will be very helpful to more advanced students.

Science News Letter, February 27, 1937

Ornithology

THE ABC OF ATTRACTING BIRDS—Alvin M. Peterson—*Bruce*, 146 p., illus., \$1.50. Spring is at hand again, and you will be furnishing up your bird baths, nesting boxes, feeding trays, etc. This little book may give you some valuable new suggestions. And are the shrubs and vines on your place the kinds that birds like? Mr. Peterson has something to say about that, too.

Science News Letter, February 27, 1937

Histology

A MANUAL OF NORMAL HISTOLOGY AND ORGANOGRAPHY (7th ed.)—Charles Hill—*Saunders*, 530 p., illus., part col., \$3.50. A text for elementary students, thoroughly revised. The author was former head of the Department of Histology and Embryology at the Northwestern University Medical School.

Science News Letter, February 27, 1937

Medicine

AUTOPSY DIAGNOSIS AND TECHNIQUE, A MANUAL FOR MEDICAL STUDENTS, PRACTITIONERS, PATHOLOGISTS AND CORONERS' PHYSICIANS—Otto Saphir—*Hoerber*, 342 p., illus., \$5. By a prominent pathologist, who is Chairman of the Nelson Morris Institute for Medical Research; with a foreword by Ludvig Hektoen.

Science News Letter, February 27, 1937